Composite Fe - BaCe0.2Zr0.6Y0.2O2.9 Anodes for Proton Conductor Fuel Cells - DTU Orbit (15/12/2018)

Composite Fe - BaCe0.2Zr0.6Y0.2O2.9 Anodes for Proton Conductor Fuel Cells
Symmetrical cells with Fe - BaCe0.2Zr0.6Y0.2O2.9 composite electrodes are produced by screen printing and infiltration, using BaCe0.2Zr0.6Y0.2O2.9 as electrolyte. The electrochemical performance of the composite electrode is studied by impedance spectroscopy at 250–500 °C in dry and wet hydrogen/nitrogen mixtures. The polarization resistance is 1.6 _ cm2 at 500 °C in wet H2 (pH2O = 0.01 atm), and has an activation energy of 0.72 eV. The cells degrade upon exposure to temperatures up to 500 °C, likely due to coarsening of the iron nanoparticles and loss of electronic percolation in the composite anode. Iron has potential to be a promising anode material for PCFCs, once electronic percolation in the electrode is improved and degradation is reduced. © 2014 The Electrochemical Society.

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